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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BAND, MICHAEL A	

ART UNIT	PAPER NUMBER
1753	

MAIL DATE	DELIVERY MODE
09/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,500	STEBBINS ET AL.	
	Examiner	Art Unit	
	Michael Band	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/27/2004; 3/14/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 13-14, 16-17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Sajoto et al (USPGPub 2002/0015855).

With respect to claims 1 and 17, Sajoto '855 discloses a system for depositing (i.e. sputtering) thin metal-oxide films and ferroelectric films by PVD (physical vapor deposition) and CVD (chemical vapor deposition) processing, with the PVD chamber used for sputter depositing (p. 2, para 0013). The invention also provides for "a system for processing substrates, comprising a vacuum chamber, a PVD chamber in communication with the vacuum chamber, and a CVD having multiple vaporized gas precursor inlets, the CVD chamber being in communication with the vacuum chamber" (p. 2, para 0014). Figure 1 depicts a PVD chamber with a process cavity (part 46) with an exhaust pump (part 58) and chamber enclosure (part 2) "to establish and maintain a vacuum environment in the chamber during processing" (p. 3, para 0032). Figure 1 further depicts a target (part 4) electrically connected to a power source (part 52) (p. 3, para 0036) with upper and lower shields (parts 32 and 40). Figure 3 depicts a CVD chamber with a removable deposition chamber liner (part 128) adjacent to an inner wall

(part 122), with the liner having a PID controlled heating element which maintains the liner walls at the optimum isothermal temperature (p.5, para 0049-0050). It is inherent that since the chamber liner is removable, a final coat (i.e. overcoat) of the deposition material is present upon said chamber liner. It is well known that all materials exhibit thermal properties that cause them to expand upon heating and contract upon cooling due to the laws of thermodynamics. It should be noted that the chamber liner (figure 3, part 128) and the upper and lower shields (figure 1, parts 32 and 40) have similar functions along with similar placements in their respective CVD and PVD processes.

With respect to claim 2, Sajoto '855 further discloses that the liner is composed of aluminum (p. 5, para 0049). It is well known that aluminum is a ductile (i.e. flexible) and soft metal.

With respect to claims 13 and 14, Sajoto '855 further depicts in figure 3 an interior plate (i.e. ceiling) (part 126) located directly above a substrate support member (part 124). It is inherent that a substrate support member has a substrate.

With respect to claim 16, Sajoto '855 further depicts in figure 3 a chamber liner (part 128) disposed adjacent to an inner wall (i.e. sidewall) (part 122).

With respect to claim 19, Sajoto '855 further discloses that the target material for forming layers includes aluminum along with other materials from reactive sputtering wherein the sputtered material reacts with other materials or gases (i.e. argon, oxygen, nitrogen, etc.) to form the deposited film (p. 3, para 0032). It is well known that aluminum oxide (Al_2O_3) is classified as a ceramic material. Furthermore, Sajoto '855 discusses ceramic materials that compose the chamber liner, specifically Al_2O_3 (p. 5,

para 0049). In addition, figure 6 depicts an oxidizer (i.e. reactive) gas passage (part 154) to optimally mix and deliver the oxidizer gas to a blocker plate and face plate (figure 3, parts 190 and 192) and thus into the chamber as an atmospheric gas.

Claim Rejections - 35 USC § 103

3. Claims 3-12, 22-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sajoto et al (USPGPub 2002/0015855) in view of Thach et al (US Patent No. 6,659,331).

With respect to claims 3-7, the reference is cited as discussed for claim 1. However Sajoto '855 is limited in that the liner material being fibrous is not specifically suggested.

Thach '331 teaches a plasma-resistant, welded aluminum alloy structures for use in semiconductor apparatus (abstract) such as physical vapor deposition and chemical vapor deposition (col. 1, lines 15-22), where figure 2B depicts a top view of the annular chamber liner and figure 3B depicts the microstructure of the aluminum grains (i.e. fibers) randomly intertangled. Thach '311 further teaches that the aluminum is represented in white in figure 3A (col. 9, lines 11-15), the grey areas representing interstitial spaces since it is not a part of the aluminum crystal lattice. Thach '311 cites the advantage of constructing this type of fibrous chamber liner with an aluminum alloy as an improved life span of the chamber liner (col. 3, lines 30-43).

It would have been obvious to one of ordinary skill to use a fibrous aluminum alloy chamber liner taught in Thach '311 for the chamber liner of Sajoto '855 in order to gain the advantage of superior life span of the chamber liner.

With respect to claims 8 and 9, the reference is cited as discussed for claim 1. Sajoto '855 further discloses that the liner comprises a ceramic material (e.g. Al_2O_3) (p. 5, para 0049), with Al_2O_3 (alumina) being a known refractory ceramic due to its well known high melting point of approximately 2054^0C as evidenced by Encyclopaedia Britannica and www.wikipedia.com (Documents U and V of PTO-892, filed 8/22/2007). However Sajoto '855 is limited in that it is not specifically disclosed to have the ceramic liner be fibrous.

Thach '331 teaches a plasma-resistant, welded aluminum alloy structures for use in semiconductor apparatus (abstract) such as physical vapor deposition and chemical vapor deposition (col. 1, lines 15-22), where figure 2B depicts a top view of the annular chamber liner and figure 3B depicts the microstructure of the aluminum grains (i.e. ceramic fibers) randomly intertangled. Thach '311 further teaches that the aluminum is represented in white in figure 3A (col. 9, lines 11-15), the grey areas representing interstitial spaces since it is not a part of the aluminum crystal lattice. Thach '311 cites the advantage of constructing this type of fibrous chamber liner with an aluminum alloy as an improved life span of the chamber liner (col. 3, lines 30-43).

It would have been obvious to one of ordinary skill to use a fibrous aluminum composition chamber liner taught in Thach '311 for the chamber liner of Sajoto '855 in order to gain the advantage of superior life span of the chamber liner.

With respect to claims 10 and 11, modified Sajoto '855 further discloses that the liner comprises a material of a metal, e.g. stainless steel (p. 5, para 0049). Stainless steel is a well known metal alloy.

With respect to claim 12, modified Sajoto '855 further discloses that the liner comprises a ceramic material (Al_2O_3) and quartz. Mineral wool is known to encompass ceramic fibers and fiberglass (i.e. quartz) as evidenced by www.wikipedia.com (Document W of PTO-892, filed 8/22/2007).

With respect to claims 22-26, Sajoto '855 discloses a system for depositing (i.e. sputtering) thin metal-oxide films and ferroelectric films by PVD (physical vapor deposition) and CVD (chemical vapor deposition) processing, with the PVD chamber used for sputter depositing dielectric and conductive materials (abstract; p. 2, para 0013). The invention also provides for "a system for processing substrates, comprising a vacuum chamber, a PVD chamber in communication with the vacuum chamber, and a CVD having multiple vaporized gas precursor inlets, the CVD chamber being in communication with the vacuum chamber" (p. 2, para 0014). Figure 1 depicts a PVD chamber with a process cavity (part 46) with an exhaust pump (part 58) and chamber enclosure (part 2) "to establish and maintain a vacuum environment in the chamber during processing" (p. 3, para 0032). Figure 1 further depicts a target (part 4) electrically connected to a power source (part 52) (p. 3, para 0036) with an upper and lower shield (parts 32 and 40). Figure 3 depicts a CVD chamber with a removable chamber liner (part 128) adjacent to an inner wall (part 122) (p.5, para 0049). It is inherent that since the chamber liner is removable, a final coat (i.e. overcoat) of the deposition material is

present upon said chamber liner. It should be noted that the chamber liner (figure 3, part 128) and the upper and lower shields (figure 1, parts 32 and 40) have similar functions along with similar placements in their respective CVD and PVD processes. Furthermore Sajoto '855 discusses the removable chamber liner composed of metal or metal alloy (e.g. stainless steel or aluminum) or a ceramic material (e.g. Al_2O_3) (p. 5, para 0049). However Sajoto '855 is limited in that the liner material being fibrous is not specifically suggested.

Thach '331 teaches a plasma-resistant, welded aluminum alloy structures for use in semiconductor apparatus (abstract) such as physical vapor deposition and chemical vapor deposition (col. 1, lines 15-22), where figure 2B depicts a top view of the annular chamber liner and figure 3B depicts the microstructure of the aluminum grains (i.e. fibers) randomly intertangled (i.e. a mat of fibrous material; non-woven web). Thach '311 cites the advantage of constructing this type of fibrous chamber liner with an aluminum alloy as an improved life span of the chamber liner (col. 3, lines 30-43).

It would have been obvious to one of ordinary skill to use a fibrous patterned chamber liner taught in Thach '311 for the chamber liner of Sajoto '855 in order to gain the advantage of superior life span of the chamber liner.

With respect to claims 27-28, Sajoto '855 discloses a system for depositing (i.e. sputtering) thin metal-oxide films and ferroelectric films by PVD (physical vapor deposition) and CVD (chemical vapor deposition) processing, with the PVD chamber used for sputter depositing (p. 2, para 0013). The invention also provides for "a system for processing substrates, comprising a vacuum chamber, a PVD chamber in

communication with the vacuum chamber, and a CVD having multiple vaporized gas precursor inlets, the CVD chamber being in communication with the vacuum chamber" (p. 2, para 0014). Figure 1 depicts a PVD chamber with a process cavity (part 46) with an exhaust pump (part 58) and chamber enclosure (part 2) "to establish and maintain a vacuum environment in the chamber during processing" (p. 3, para 0032). Figure 1 further depicts a target (part 4) electrically connected to a power source (part 52) (p. 3, para 0036) with an upper and lower shield (parts 32 and 40). Figure 3 depicts a CVD chamber with a removable chamber liner (part 128) adjacent to an inner wall (part 122) (p.5, para 0049). It should be noted that the chamber liner (figure 3, part 128) and the upper and lower shields (figure 1, parts 32 and 40) have similar functions along with similar placements in their respective CVD and PVD processes. Furthermore Sajoto '855 discusses the removable chamber liner composed of metal (e.g. stainless steel or aluminum) or a ceramic material (e.g. Al_2O_3) (p. 5, para 0049). However Sajoto '855 is limited in that the liner material being fibrous is not specifically suggested.

Thach '331 teaches a plasma-resistant, welded aluminum alloy structures for use in semiconductor apparatus (abstract) such as physical vapor deposition and chemical vapor deposition (col. 1, lines 15-22), where figure 2B depicts a top view of the annular chamber liner and figure 3B depicts the microstructure of the aluminum grains (i.e. fibers) randomly intertangled. Thach '311 cites the advantage of constructing this type of fibrous chamber liner with an aluminum alloy as an improved life span (col. 3, lines 30-43).

It would have been obvious to one of ordinary skill to use a fibrous patterned chamber liner taught in Thach '311 for the chamber liner of Sajoto '855 in order to gain the advantage of superior life span of the chamber liner.

With respect to claim 29, modified Sajoto '855 further discloses that the target material for forming layers includes aluminum along with other materials from reactive sputtering wherein the sputtered material reacts with other materials or gases (i.e. argon, oxygen, nitrogen, etc.) to form the deposited film (p. 3, para 0032). It is well known that aluminum oxide (Al_2O_3) is classified as a ceramic material. Furthermore, modified Sajoto '855 discusses ceramic materials that compose the chamber liner, specifically Al_2O_3 (p. 5, para 0049). In addition, figure 6 depicts an oxidizer (i.e. reactive) gas passage (part 154) to optimally mix and deliver the oxidizer gas to a blocker plate and face plate (figure 3, parts 190 and 192) and thus into the chamber as an atmospheric gas.

With respect to claim 30, Sajoto '855 discloses a system for depositing (i.e. sputtering) thin metal-oxide films and ferroelectric films by PVD (physical vapor deposition) and CVD (chemical vapor deposition) processing, with the PVD chamber used for sputter depositing (p. 2, para 0013). The invention also provides for "a system for processing substrates, comprising a vacuum chamber, a PVD chamber in communication with the vacuum chamber, and a CVD having multiple vaporized gas precursor inlets, the CVD chamber being in communication with the vacuum chamber" (p. 2, para 0014). Figure 1 depicts a PVD chamber with a process cavity (part 46) with an exhaust pump (part 58) and chamber enclosure (part 2) "to establish and maintain a

vacuum environment in the chamber during processing" (p. 3, para 0032). Figure 1 further depicts a target (part 4) electrically connected to a power source (part 52) (p. 3, para 0036) with an upper and lower shield (parts 32 and 40). Figure 3 depicts a CVD chamber with a removable chamber liner (part 128) adjacent to an inner wall (part 122) (p.5, para 0049). It should be noted that the chamber liner (figure 3, part 128) and the upper and lower shields (figure 1, parts 32 and 40) have similar functions along with similar placements in their respective CVD and PVD processes. Furthermore Sajoto '855 discusses the removable chamber liner composed of metal (e.g. stainless steel or aluminum) or a ceramic material (e.g. Al_2O_3) (p. 5, para 0049). However Sajoto '855 is limited in that the liner material being fibrous is not specifically suggested.

Thach '331 teaches a plasma-resistant, welded aluminum alloy structures for use in semiconductor apparatus (abstract) such as physical vapor deposition and chemical vapor deposition (col. 1, lines 15-22), where figure 2B depicts a top view of the annular chamber liner and figure 3B depicts the microstructure of the aluminum grains (i.e. fibers) randomly intertangled. Thach '311 cites the advantage of constructing this type of fibrous chamber liner with an aluminum alloy as an improved life span of the chamber liner (col. 3, lines 30-43).

It would have been obvious to one of ordinary skill to use a fibrous patterned chamber liner taught in Thach '311 for the chamber liner of Sajoto '855 in order to gain the advantage of superior life span of the chamber liner.

With respect to claims 31-33, Thach '311 further teaches how for the particulates of the impurity compounds (figure 3B, grey parts), "at least 95% of all particles must be

less than 5 μm in size. Five (5) % of all the particles may range from 5 μm to 20 μm in size" (col. 4, lines 14-19). According to figure 3B, the grey areas are of equivalent size to the white (aluminum) areas.

4. Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sajoto et al (USPGPub 2002/0015855) as applied to claims 1 and 17.

With respect to claims 15 and 18, the reference is cited as discussed for claims 1 and 17. Sajoto '855 further depicts in figure 1 a PVD chamber (part 1) with upper shield (part 40) and lower shield (part 32) acting as chamber liners (p. 3, para 0033-0034). A circular target (part 4) is seen below the top (i.e. ceiling) of the chamber. However Sajoto '855 is limited in that only one rotary target is suggested instead of the claimed two.

It has been held that a mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). Therefore it would have been obvious to one of ordinary skill in the art to place two or more targets to sputter multiple materials instead of one into the apparatus of Sajoto '855 since sputtering multiple types of materials has no bearing on the functioning of the chamber liner as evidenced by Belkind et al (US Patent No. 5,338,422; abstract; figure 1, parts 130 and 150).

5. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sajoto et al (USPGPub 2002/0015855) as applied to claim 17 above, and further in view of Wicker et al (USPGPub 2002/0102858).

With respect to claims 20-21, the reference is cited as discussed for claim 17. However Sajoto '855 is limited in that while it is discussed that the chamber liner is removable and therefore requires some type of connection, said connection is not specified.

Wicker '858 discusses a high density plasma processing chamber for fabrication of integrated circuits in the form of wafer (i.e. semiconductors) having a chamber liner (part 130) and a liner support (part 134) with the chamber liner composed of a ceramic material and the liner support composed of a flexible aluminum material (abstract; figure 1; p. 1, para 0005; p. 2, para 0017). Depicted in figure 1 are screws near parts 130 and 132a attaching the liner support which is attached to the chamber liner. It is well known that screws can be composed of aluminum and inherently have a degree of roughness exhibited in its threads and head, as evidenced by www.wikipedia.com (Document X of PTO-892, filed 8/22/2007). Surface roughness is a result effective variable, thus it is obvious to optimize as evidenced by Rath et al (US Patent No. 5,039,265; col. 8, lines 19-47). Wicker '858 cites the advantage of the liner support as enabling the wall to absorb thermal stresses (abstract).

Rath et al is used as evidence to illustrate that roughness is a result effective variable known in the art. Therefore it would have been obvious to one of ordinary skill in the art to use the liner support, and therefore the screw fasteners, taught by Wicker '858 to attach the removable chamber liner in Sajoto '855 in order to gain the advantage of superior absorption of thermal stressing.

Since this particular parameter is recognized as a result-effective variable, i.e., a variable which achieves a recognized result, the determination of the optimum or workable ranges of said variable can be characterized as routine experimentation. See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 CCPA 1980.

It has been held that matters relating to ornamentation (i.e. fastener surface roughness) only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947).

6. Claims 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sajoto et al (USPGPub 2002/0015855) and Thach et al (US Patent No. 6,659,331) as applied to claim 30 above, and further in view of Wicker et al (USPGPub 2002/0102858).

With respect to claims 34 and 36-38, the references are cited as discussed for claim 30. Modified Sajoto '855 discloses that the chamber liner is composed of various materials, including aluminum, stainless steel, Al_2O_3, and quartz (p. 5, para 0049). However modified Sajoto '855 is limited in that while it is discussed that the chamber liner is removable and therefore requires some type of connection, said connection is not specified.

Wicker '858 discusses a high density plasma processing chamber for fabrication of integrated circuits in the form of wafer (i.e. semiconductors) having a chamber liner (part 130) and a liner support (part 134) with the chamber liner composed of a ceramic material and the liner support composed of a flexible aluminum material (abstract; figure

1; p. 1, para 0005; p. 2, para 0017). Depicted in figure 1 are screws (figure 3A, part 144) near parts 130 and 132a attaching the liner support which is attached to the chamber liner. It is well known that screws are composed of aluminum and inherently have a degree of roughness exhibited in its threads and head, as evidenced by www.wikipedia.com (Document X of PTO-892, filed 8/22/2007). Surface roughness is a result effective variable, thus it is obvious to optimize as evidenced by Rath et al (US Patent No. 5,039,265; col. 8, lines 19-47). Since the fastener is the aluminum and the liner is aluminum, the fastener and the liner have the same thermal expansion coefficients. Wicker '858 cites the advantage of the liner support as enabling the wall to absorb thermal stresses (abstract).

Rath et al is used as evidence to illustrate that roughness is a result effective variable known in the art. Therefore it would have been obvious to one of ordinary skill in the art to use the liner support, and therefore the screw fasteners, taught by Wicker '858 to attach the removable chamber liner in Sajoto '855 in order to gain the advantage of superior absorption of thermal stressing.

Since this particular parameter is recognized as a result-effective variable, i.e., a variable which achieves a recognized result, the determination of the optimum or workable ranges of said variable can be characterized as routine experimentation. See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 CCPA 1980.

It has been held that matters relating to ornamentation (i.e. fastener surface roughness) only which have no mechanical function cannot be relied upon to patentably

distinguish the claimed invention from the prior art. *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947).

With respect to claim 35, Wicker '858 further depicts an elongated screw where the liner is sandwiched between the interior surface (i.e. wall) and fastening bar (i.e. screw head).

7. Claims 39-43 rejected under 35 U.S.C. 103(a) as being unpatentable over Sajoto et al (USPGPub 2002/0015855) in view of Thach et al (US Patent No. 6,659,331) and Wicker et al (USPGPub 2002/0102858).

With respect to claims 39-42, Sajoto '855 discloses a system for depositing (i.e. sputtering) thin metal-oxide films and ferroelectric films by PVD (physical vapor deposition) and CVD (chemical vapor deposition) processing, with the PVD chamber used for sputter depositing dielectric and conductive materials (abstract; p. 2, para 0013). The invention also provides for "a system for processing substrates, comprising a vacuum chamber, a PVD chamber in communication with the vacuum chamber, and a CVD having multiple vaporized gas precursor inlets, the CVD chamber being in communication with the vacuum chamber" (p. 2, para 0014). Figure 1 depicts a PVD chamber with a process cavity (part 46) with an exhaust pump (part 58) and chamber enclosure (part 2) "to establish and maintain a vacuum environment in the chamber during processing" (p. 3, para 0032). Figure 1 further depicts a target (part 4) electrically connected to a power source (part 52) (p. 3, para 0036) with an upper and lower shield (parts 32 and 40). Figure 3 depicts a CVD chamber with a removable chamber liner (part 128) adjacent to an inner wall (part 122) (p.5, para 0049). It should be noted that

the chamber liner (figure 3, part 128) and the upper and lower shields (figure 1, parts 32 and 40) have similar functions along with similar placements in their respective CVD and PVD processes. Furthermore Sajoto '855 discusses the removable chamber liner composed of metal (e.g. stainless steel or aluminum) or a ceramic material (e.g. Al_2O_3) (p. 5, para 0049). However Sajoto '855 is limited in that the liner material being fibrous is not specifically suggested.

Thach '331 teaches a plasma-resistant, welded aluminum alloy structures for use in semiconductor apparatus (abstract) such as physical vapor deposition and chemical vapor deposition (col. 1, lines 15-22), where figure 2B depicts a top view of the annular chamber liner and figure 3B depicts the microstructure of the aluminum grains (i.e. fibers) randomly intertangled. Thach '311 cites the advantage of constructing this type of fibrous chamber liner with an aluminum alloy as an improved life span of the chamber liner (col. 3, lines 30-43).

It would have been obvious to one of ordinary skill to use a fibrous patterned chamber liner taught in Thach '311 for the chamber liner of Sajoto '855 in order to gain the advantage of superior life span of the chamber liner.

In addition, modified Sajoto '855 is further limited in that while it is discussed that the chamber liner is removable and therefore requires some type of connection, said connection is not specified.

Wicker '858 discusses a high density plasma processing chamber for fabrication of integrated circuits in the form of wafer (i.e. semiconductors) having a chamber liner (part 130) and a liner support (part 134) with the chamber liner composed of a ceramic

material and the liner support composed of a flexible aluminum material (abstract; figure 1; p. 1, para 0005; p. 2, para 0017). Depicted in figure 1 are screws (figure 3A, part 144) near parts 130 and 132a attaching the liner support which is attached to the chamber liner. It is well known that screws are composed of aluminum and inherently have a degree of roughness exhibited in its threads and head, as evidenced by www.wikipedia.com (Document X of PTO-892, filed 8/22/2007). Surface roughness is a result effective variable, thus it is obvious to optimize. Wicker '858 cites the advantage of the liner support as enabling the wall to absorb thermal stresses (abstract).

It would have been obvious to one of ordinary skill in the art to use the liner support, and therefore the screw fasteners, taught by Wicker '858 to attach the removable chamber liner in modified Sajoto '855 in order to gain the advantage of superior absorption of thermal stressing.

It has been held that matters relating to ornamentation (i.e. fastener surface roughness) only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention from the prior art. *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947).

Sajoto '855 further depicts in figure 1 a PVD chamber (part 1) with upper shield (part 40) and lower shield (part 32) acting as chamber liners (p. 3, para 0033-0034). A circular target (part 4) is seen below the top (i.e. ceiling) of the chamber. However Sajoto '855 is limited in that only one rotary target is suggested instead of the claimed two.

It has been held that a mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). Therefore it would have been obvious to one of ordinary skill in the art to place two or more targets to sputter multiple materials instead of one into the apparatus of Sajoto '855 since sputtering multiple types of materials has no bearing on the functioning of the chamber liner as evidenced by Belkind et al (US Patent No. 5,338,422; abstract; figure 1, parts 130 and 150).

With respect to claim 43, Wicker '858 further depicts an elongated screw where the liner is sandwiched between the interior surface (i.e. wall) and fastening bar (i.e. screw head).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPGPub 2002/0073922 as being related to the state of the art.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 8am-4pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MAB

/Rodney McDonald/
Primary Examiner
Art Unit 1753